DOC-READER

❁≫ Written Histo ≪❁

Enumerate

1- Enumerate cells of pars distalis·

- Chromophobes (52%)
- Chromophils (48%)
  - → Acidophilic (somatotrophs & mammotropes)
  - → basophilic (thyrotrophs & corticotrophs & Gonadotrophs)

2- Enumerate structure of pars nervosa·

1- unmyelinated nerve fibers·

2- Herring bodies

3- pituicytes (supporting cell)

4- fenestrated blood capillarie

3- Enumerate structure of pineal body (gland)·

1- stroma (capsule_ septa_ Reticular C·T·)

2- parenchyma (Astrocytes_ pinealocytes_ calcified concretions)

4- Enumerate structure of thyroid gland·

1- stroma (double capsule_ septa_ Reticular fibers)

2- parenchyma (composed of follicles → follicles surrounded by blood capillaries _ contain gelatinous acidophilic material (colloid) _ lined by cubical cells (follicular & parafollicular)

5- EM structure of follicular cells·

- Basally → Rough endoplasmic reticulum·
- Apically → Golgi (supra nuclear) - secretory vesicles containing thyroglobulin _ Microvilli _ lysosome _ endocytotic vesicles·

6- Enumerate structure of parafollicular cells.

- **L.M**
  - Size → larger than the follicular cells.
  - Cytoplasm → Pale (clear cells).
  - Their basal surface rest on follicular basement membrane but their apical surface never reaches the lumen of the follicles.
- **E.M.**
  - Moderate number of organelles → because these cells considered as one of APUD cells which secrete hormones at slow rate and moderate amount
  - Infra nuclear Golgi.
  - The secretory granules are small and basal → because the secretion of this cells toward the blood capillaries which present at the base of the cells

7- Enumerate Structure of parathyroid gland.

1- Stroma: → CT capsule & CT septa & Reticular Fibers.

2- Parenchyma:

→ Cords of polygonal cells (chief & oxyphil cells)

→ surrounded by network of fenestrated blood capillaries.

8- Enumerate structure of chief cells

9- Enumerate Structure of oxyphil cells كامقارنة الاتنين كدا احسن للحفظ

L.M	Chief cells	Oxyphil cells
Shape	Small & polygonal cells	Large & polygonal
Number	Numerous	Few

Nucleus	Large vesicular nuclei	Small , dense nuclei
Cytoplasm	Pale	deep eosinophilic
E·M	→ moderate amount of organelles (rER, Mitochondria, Golgi) → Glycogen granules & lipid droplets	→ the cytoplasm contains Many mitochondria

10- Enumerate Structure of Adrenal (suprarenal gland)·

1- Stroma:

- CT capsule cortex medial
- CT septa
- Reticular CT

2- Parenchyma:

- Cortex:

1) Zona glomerulosa
2) Zona fasciculata
3) Zona Reticularis

- Medulla

1) Chromaffin cells
2) Sympathetic ganglion cells

Complete

1· The islets of Langerhans are more numerous in the __ of the pancreas·

Answer: tail

2· The primary function of beta cells in the pancreas is to secrete __·

Answer: insulin

3. The thyroid gland secretory cells are called __.

Answer: follicular cells

4. The adrenal cortex is divided into three zones: zona glomerulosa, zona fasciculata, and __.

Answer: zona reticularis

5. The hormone calcitonin is produced by the __ cells of the thyroid gland.

Answer: parafollicular (C) cells

6. The adrenal medulla secretes __.

Answer: adrenaline and noradrenaline

7. The pancreas is a __ gland, meaning it has both endocrine and exocrine functions.

Answer: mixed

8. The chief cells in the parathyroid glands secrete __.

Answer: parathyroid hormone

9. Alpha cells of the pancreas secrete __, which increases blood sugar levels.

Answer: glucagon

10. The adrenal medulla is derived from __.

Answer: neuroectoderm

11. The zona glomerulosa of the adrenal cortex primarily secretes __.

Answer: aldosterone

12. The cells that secrete adrenaline in the adrenal medulla are called __.

Answer: chromaffin cells

13. The thyroid follicles contain a gelatinous substance called __.

Answer: colloid

True or false

1. The islets of Langerhans in the pancreas are composed solely of endocrine cells.

Answer: False

2. The parathyroid glands secrete calcitonin to lower blood calcium levels.

Answer: False

3. The adrenal cortex secretes glucocorticoids such as cortisol.

Answer: True

4. Alpha cells in the pancreas secrete insulin.

Answer: False

5. The thyroid gland's parafollicular cells secrete parathyroid hormone.

Answer: False

6. The zona reticularis of the adrenal cortex is responsible for secreting aldosterone.

Answer: False

7. The chief cells in the parathyroid secrete parathyroid hormone.

Answer: True

8. The thyroid gland is involved in regulating blood calcium levels.

Answer: false

9. Adrenaline is produced by the adrenal cortex.

Answer: False

10. The zona fasciculata of the adrenal cortex produces aldosterone.

Answer: False

11. The zona glomerulosa of the adrenal cortex secretes aldosterone.

Answer: True

12. Chromaffin cells secrete adrenaline and noradrenaline.

Answer: True

13. The pineal gland secretes prolactin, which stimulates milk production.

Answer: False

14. Somatotrophs in the anterior pituitary secrete thyroid-stimulating hormone (TSH).

Answer: False (Somatotrophs secrete growth hormone)

15. The adenohypophysis consists of glandular epithelial cells that secrete hormones.

Answer: True

16. The pineal gland contains calcified concretions that are visible on X-ray.

Answer: True

✧ Assay Questions ✧

1- What are the corpora arenacea?

- Calcified concretions found in the pineal gland , increasing with age and sometimes visible on x - rays.

2- What are the chromophobes and chromophils in the adenohypophysis?

✧ Chromophobes:

- Chromophobes are smaller cells with pale cytoplasm that have weak affinity to stains and are less active in hormone secretion

✧ **Chromophils:**

- Chromophils are larger cells with a strong affinity to stains and are responsible for secreting hormones.

3- What is the difference between acidophil and basophils in the pituitary gland ?

- **Acidophils** : have a strong affinity for acidic stains and secrete protein hormones like growth hormone (GH) and prolactin.
- **Basophils** : have a strong affinity for basic stains and secrete glycoprotein hormones such as TSH, ACTH, and FSH/LH.

4- What are the main characteristics of the chief cells in the parathyroid gland?

- **Light Microscopy (L.M):**
  - Shape: Small polygonal cells
  - Cytoplasm: Pale
  - Nucleus: Large vesicular nucleus
  - Number: Numerous
- **Electron Microscopy (E.M):**
  - Cytoplasm contains moderate amount of organelles:
  - rER, Mitochondria, Golgi apparatus
  - Glycogen granules & lipid droplets present.

5- Why do parathyroid chief cells contain moderate amount of organelles?

- Because these cells are considered as one of APUD cells which secrete hormones at a slow rate and in moderate amounts. Therefore, they have a moderate number of organelles to support their function of synthesizing and sec

6- Describe the structure of oxyphil cells in the parathyroid gland?

- **LM:**
  - Shape: Large polygonal cells
  - Cytoplasm: Deep eosinophilic
  - Nucleus: Small & dense nuclei
  - Number: Few
- **EM:**
  - Cytoplasm contains many mitochondria.
- The function of oxyphil cells is still not fully understood, and they are fewer in number compared to chief cells.

7- What changes occur in the parathyroid gland with aging?

→ Chief cells are replaced by fat cells which may constitute more than 50% of the gland.

→ Number of oxyphil cells increases.

8- Describe the features of the zona fasciculata of the adrenal cortex?

- The zona fasciculata is the largest layer of the adrenal cortex. It is composed of large polyhedral cells arranged in long, straight cords (fascicles), separated by narrow fenestrated capillaries. The cells are pale, acidophilic, and highly vacuolated due to lipid

droplets. They secrete glucocorticoids, such as cortisol, which regulate metabolism and have anti-inflammatory effects.

9- Explain the structure of the zona reticularis?

- The zona reticularis is the innermost layer of the adrenal cortex. It consists of small, polyhedral cells arranged in branching cords, separated by sinusoidal capillaries. The cells have slightly vacuolated, acidophilic cytoplasm and secrete small amounts of androgens and glucocorticoids.

10- Describe the structure of chromaffin cells?

- Chromaffin cells are modified sympathetic neurons that have lost their processes and function as secretory cells. They are polyhedral in shape with a central rounded, pale nucleus. Their cytoplasm is basophilic and contains granules of adrenaline (epinephrine) and noradrenaline (norepinephrine), which are stained brown by chromium salts.

11-What is the difference between adrenaline and noradrenaline granules in chromaffin cells?

- ***Adrenaline granules:***
  - Less dense & homogenous
  - Content fills the granules completely
- ***Noradrenaline granules:***
  - More dense & heterogeneous
  - Content does not fill the granules completely

12- What are the structural differences between the three zones of the adrenal cortex?

- ***The zona glomerulosa*** *has columnar cells arranged in clusters,*
- ***the zona fasciculata*** *consists of large polyhedral cells in straight cords*
- ***the zona reticularis*** *has small polyhedral cells arranged in branching cords*

  →The cytoplasm of the zona fasciculata is highly vacuolated, while the zona glomerulosa has slightly vacuolated cytoplasm.

Exams Questions

1- Enumerate the characteristics structure of cells of zona glomerulosa ? (Final 24)

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2- Enumerate chromophils cells of pars distalis ? (Final 24)

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3- Enumerate the characteristics EM structure of follicular cells ? (Final 23)

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Other Questions

4- Enumerate structure of pineal body (gland).

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5- Enumerate structure of pars nervosa.

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6- Enumerate the characteristics structure of parafollicular cells.

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7- Describe the features of the zona fasciculata of the adrenal cortex?

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8- Complete :The hormone calcitonin is produced by the ..... cells of the thyroid gland.

Answer .....

9- Complete : The adrenal medulla is derived from .....

Answer .....

10- Describe the structure of oxyphil cells in the parathyroid gland?

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11-Explain the structure of the zona reticularis?

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12- What changes occur in the parathyroid gland with aging?

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13- Describe the structure of chromaffin cells?

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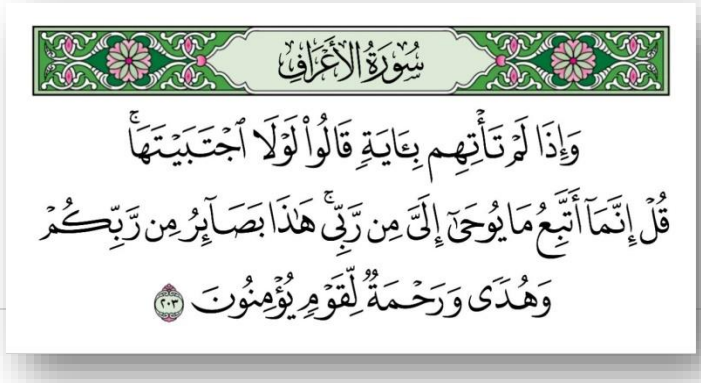
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